

CLAIMS

1. An image formation apparatus capable of forming a relatively large ink drop by sequentially
5 discharging a plurality of ink drops from an ink drop discharging head, the sequential ink drops merging before reaching a print target medium, the image formation apparatus comprising:

pressure generating means for discharging
10 one or more of the ink drops other than an ink drop that is not followed by any more of the ink drops in a given printing cycle (the last ink drop) at an interval nearly equal to $(n+1/2) \times T_c$, where n is an integer equal to or greater than 1, and T_c
15 represents a resonance cycle of a pressurized ink chamber of the image formation apparatus, the interval being measured from when a corresponding preceding ink drop is discharged.

20 2. The image formation apparatus as claimed in claim 1, wherein the one or more of the ink drops other than the last ink drop are discharged at an interval nearly equal to $1.5 \times T_c$.

25 3. The image formation apparatus as

claimed in claim 1, wherein ink drops other than the one or more ink drops that are discharged at an interval nearly equal to $(n+1/2) \times T_c$ are discharged at an interval nearly equal to $n \times T_c$.

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4. The image formation apparatus as claimed in claim 1, wherein a first ink drop is discharged by the pressurized ink chamber being contracted after being expanded, where a volume of contraction is greater than a volume of expansion, and where the volume of expansion may take a positive value or zero.

5. The image formation apparatus as claimed in claim 4, wherein a second ink drop is discharged at an interval nearly equal to $(n+1/2) \times T_c$ from the first ink drop that precedes the second ink drop.

6. The image formation apparatus as claimed in claim 1, wherein a speed of one of the ink drops (the ink drop speed V_j) discharged at the interval nearly equal to $(n+1/2) \times T_c$ from the preceding ink drop is set at greater than three m/s, and at a speed at which the sequential ink drops are

merged.

7. The image formation apparatus as
claimed in claim 1, wherein four or more of the
5 sequential ink drops merge during flight to form one
of the relatively large ink drops.

8. The image formation apparatus as
claimed in claim 1, wherein a waveform containing
10 driving pulses for discharging the sequential ink
drops includes a waveform for suppressing a residual
vibration after a driving pulse for discharging the
last ink drop.

15 9. The image formation apparatus as
claimed in claim 8, wherein the waveform for
suppressing the residual vibration is provided
within an elapsed time equivalent to T_c after the
last ink drop is discharged.

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10. The image formation apparatus as
claimed in claim 1, wherein a medium-sized ink drop
and a small-sized ink drop are each formed by
selecting a part of driving pulses for forming the
25 relatively large ink drop.

11. The image formation apparatus as
claimed in claim 10, wherein the driving pulses
include a waveform for vibrating a meniscus without
5 causing an ink drop to be discharged.

12. The image formation apparatus as
claimed in claim 10, wherein the driving pulses
include a section wherein a voltage is applied to
10 the pressure generating means for pressurizing ink
in the pressurized ink chamber.

13. The image formation apparatus as
claimed in claim 12, wherein the pressure generating
15 means is a piezoelectric device, and the
piezoelectric device is recharged in the section
wherein said voltage is applied.

14. The image formation apparatus as
20 claimed in claim 1, wherein the pressure generating
means for generating the pressure for pressurizing
the ink of the pressurized ink chamber is a
piezoelectric device, a displacement direction of
which is d33.

15. The image formation apparatus as claimed in claim 14, wherein support sections of the piezoelectric device support partitions of the pressurized ink chamber.